

# **Obesity is associated with a higher risk of clear-cell renal cell carcinoma than with other histologies**

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## **KEYWORDS**

kidney neoplasms • carcinoma • renal cell • obesity • body mass index • histology

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Level of Evidence 2a

## **ABSTRACT**

To investigate the association between body mass index (BMI) and histology of renal cell carcinoma (RCC) in a contemporary cohort, as obesity is increasingly prevalent in the USA and might be contributing to the increasing incidence of RCC, but little is known about the relationship of obesity with the different histological subtypes of RCC.

## **PATIENTS AND METHODS**

From January 2000 to December 2007 we identified 1640 patients with renal cortical tumours undergoing surgical extirpation at our institution, and who had their BMI recorded. Multivariable logistic regression models were used to test the association of BMI with RCC histology.

## **RESULTS**

The median (interquartile range) BMI was 28 (25–32) kg/m<sup>2</sup> and 38% of patients were classified as obese (BMI >30 kg/m<sup>2</sup>). After adjusting for tumour size, age, gender, American Society of Anesthesiologists score, estimated glomerular filtration rate, hypertension, diabetes mellitus and smoking, the BMI was significantly associated with clear-cell histology; the odds ratios were 1.04 for each unit of BMI (95% confidence interval, CI, 1.02–1.06; P < 0.001) and 1.48 when comparing obese vs non-obese patients (95% CI 1.19–1.84; P < 0.001). In the subgroup of patients with RCC (excluding benign renal cortical tumours), BMI was still an independent predictor of clear-cell histology (odds ratio 1.04, 95% CI 1.02–1.06, P = 0.001).

## **CONCLUSIONS**

These results suggest that BMI is an independent predictor of clear-cell histology in patients with a renal cortical tumour. While the aetiology of this phenomenon requires further study, these findings might have implications in determining a patient's risk of harbouring a clear-cell RCC and in subsequent treatment recommendations.